In the Claims:

1.   (Currently Amended) A sensor arrangement having a plurality of sensor devices formed <u>at least one of</u> on <s>and/</s>or in a substrate, each of the sensor devices having<u>:</u>

- •   an electrical signal converter;

- •   a sensor element coupled to the signal converter, <u>in</u> which <u>the</u> sensor element can be used to characteristically influence the electrical conductivity of the signal converter on account of a sensor event on the sensor element;

- •   a device for keeping constant an electrical voltage present at the signal converter;<u> and</u>

- •   a device for detecting the value of the electric current flowing through the signal converter as <u>a</u> sensor signal<u>,</u>

<u>wherein the electrical signal converter is a field-effect transistor having a gate terminal coupled to the sensor element, the device for keeping constant an electrical voltage keeps constant the electrical voltage between source and drain terminals of the field-effect transistor; and</u>

<u>the sensor arrangement further comprises a calibration device for calibrating a respective sensor device, the calibration device usable to bring a gate region of the field-effect transistor to an electrical calibration potential such that the electric current is independent of parameter fluctuations of the field-effect transistor.</u>

2-3.   (Cancelled)

4.   (Currently Amended) The sensor arrangement as claimed in <s>one of</s> claims 1<s> to 3</s>, <s>having</s> <u>further comprising</u> an evaluation unit, which is provided with the value of the electric current as sensor signal.

5.   (Currently Amended) The sensor arrangement as claimed in claim 4, in which the evaluation unit <s>is set up in such a way that it</s> forms, from the value of the electric current, an electrical voltage characteristic of <s>this</s> <u>the</u> value or maps the value of the electric current onto a digitally coded value that characterizes the <u>value of the electric current</u><s>latter</s>.

6.   (Currently Amended) The sensor arrangement as claimed in claim 5, in which the evaluation unit has an operational amplifier comprising:

- •   ~~having~~ a first input, to which the sensor signal can be applied;

- •   ~~having~~ a second input, to which an electrical reference potential can be applied; and

- •   ~~having~~ an output, at which the characteristic electrical voltage is provided;

- •   the first input and the output being coupled to one another by means of a nonreactive resistor.

7.   (Currently Amended) The sensor arrangement as claimed in ~~one of~~ claims 1 ~~to 6~~, configured as a biosensor arrangement.

8.   ' (Cancelled)

9.   (Currently Amended) The sensor arrangement as claimed in claim ~~8~~1, in which the calibration device is set up ~~in~~ such ~~a way~~ that an electric calibration current can be applied to the gate terminal and to ~~a~~ one of the source ~~/~~ and drain terminal of the field-effect transistor for calibration purposes.

10.   (Currently Amended) The sensor arrangement as claimed in ~~one of claims 4 to 9~~claim 4, in which the evaluation unit has a correlated double sampling device, which ~~is set up in such a way that it~~ forms, in the case of a sensor event, a value of the electric current that is independent of parameter fluctuations of the field-effect transistor.

11.   (Currently Amended) The sensor arrangement as claimed in claim 10, in which the correlated double sampling device is set up ~~in~~ such a ~~way~~ that, by means of ~~this device,~~ the correlated double sampling device:

- •   in a calibration phase, ~~the~~ a gate region of the field-effect transistor is brought to an electrical calibration potential and the associated value of the electric current is detected as a calibration signal and stored;

- •   in a detection phase, the value of the electric current on account of a sensor event is detected as a sensor signal;

- in an evaluation phase, the sensor signal and the calibration signal are evaluated jointly.

12. (Currently Amended) The sensor arrangement as claimed in ~~one of claims 1 to 11~~claim 1, in which the sensor devices are arranged essentially in matrix form at least one of on ~~and/~~or in the substrate and are connected up by means of row and column lines ~~in such a way~~ that the sensor devices can be driven individually, row by row or column by column.

13. (Currently Amended) The sensor arrangement as claimed in claim 12, in which at least one evaluation unit, at least one of: at least one calibration device ~~and/~~or at least one correlated double sampling device ~~are/~~is provided jointly for at least a portion of the sensor devices of a row line or a column line.

14. (Currently Amended) A method for operating a sensor arrangement:

- with a sensor arrangement having a plurality of sensor devices formed at least one of on ~~and/~~or in a substrate, each of the sensor devices having:
  o an electrical signal converter;
  o a sensor element coupled to the signal converter, in which the sensor element can be used to characteristically influence the electrical conductivity of the signal converter on account of a sensor event on the sensor element;
  o a device for keeping constant an electrical voltage present at the signal converter;
  o a device for detecting the value of the electric current flowing through the signal converter as a sensor signal, wherein the electrical signal converter is a field effect transistor having a gate terminal coupled to the sensor element, the device for keeping constant an electrical voltage keeps constant the electrical voltage between source and drain terminals of the field-effect transistor;
- in which case, in accordance with the method,

o   the electrical conductivity of the signal converter is characteristically influenced on account of a sensor event on the sensor element;

o   the electrical voltage at the signal converter is kept constant;

o   the electric current flowing through the signal converter is detected as sensor signal; and

in which at least a portion of the sensor devices is calibrated by a gate region of the respective field-effect transistor being brought to an electrical calibration potential such that the value of the electric current in the case of a sensor event is independent of parameter fluctuations of the field-effect transistor.

15-16. (Cancelled)

17.   (Currently Amended) The method as claimed in claim ~~15~~14, in which a value of the electric current that is independent of parameter fluctuations of the field-effect transistor is formed using ~~the~~ a correlated double sampling method in the case of a sensor event.